

Bank Capital Ratios and the Structure of Nonfinancial Industries

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Small Business and Entrepreneurship during an Economic Recovery

¹The views expressed in this paper are solely the responsibility of the authors and should not be interpreted as reflecting the views of anyone associated with the Federal Reserve System.

MOTIVATION AND QUESTIONS

- Commercial banks' balance sheets have gone through dramatic changes recently
- Much of the continued increase in capital ratios may reflect anticipated regulation (Basel III) to ensure bank safety and soundness
- However, higher capital ratios have been associated with higher loan spreads and lower loan volume
- In turn, we shed light on how higher capital ratios impact nonfinancial firm creation and size (i.e. employment)
- Specifically, we look at how changes in banks' capital ratios affect formation and size of bank-dependent manufacturing firms

LITERATURE

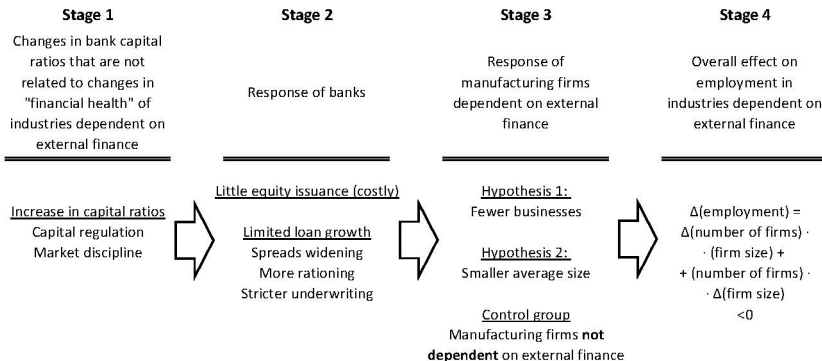
Plenty of literature on how capital levels or changes in capital regulation affected lending and loan spreads

- Aggarwal and Jacques (1998), Furlong (1992), Keeley (1988)
- Santos and Winton (2010), Fischer, Mattes, and Steffen (2009)
- But not much related to real effects on non-financial firms

Plenty of literature on how bank branch deregulation affected non-financial industry structure

- Cetorelli and Strahan (2006), Cetorelli (2003)
- Kerr and Nanda (2007, 2008)
- But these studies do not control for changes in capital ratios

EMPIRICAL STRATEGY



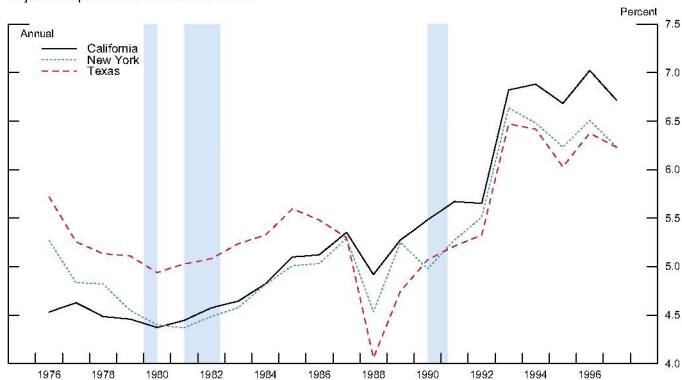
HISTORY OF TIME FRAME

The 1977-1997 period includes two waves of changes in capital regulation

- Bank capital regulation changes in early 80s
 - ▶ Primary and secondary capital ratios
- Bank capital regulation changes in late 80s and early 90s
 - ▶ Basel I, leverage ratio, and FDICIA
- Wall and Peterson (1987, 1995) argue that capital ratio adjustments are more likely due to regulatory forces
- ... Still capital may be adjusted through market discipline

ADJUSTED CAPITAL RATIOS

Adjusted capital ratios for selected states



COUNTY BUSINESS PATTERNS (CBP): OVERVIEW

Dependent variables come from CBP

- An annual series collected by Census
 - ▶ Cetorelli and Strahan (2006): "the best way to consider industry structure over a long span of time at a disaggregated level"
- Data available by states and 2-digit SIC industry
- Data consist of number of establishments and employment in mid March
- No data are provided that would disclose the operations of an individual employer

COUNTY BUSINESS PATTERNS (CBP): SAMPLE

Few pointers about the scope and scale of CBP for 1997

- 101 million total employees; 6.8 million establishments
- For the manufacturing sector
 - ▶ Independent of external finance - 208 thousand establishments, 7.7 million employees in total
 - ▶ Dependent on external finance - 175 thousand establishments, 9.5 million employees in total
- When we clean the sample, for the manufacturing, the above numbers decrease about 5 percent

MANUFACTURING INDUSTRIES

Manufacturing industries dependent on external finance

- Chemicals and allied products, electrical and electronic equipment, textile mill products, petroleum and coal products, rubber and plastic products, lumber and wood products, primary metal industries, industrial machinery and equipment, and transportation and equipment

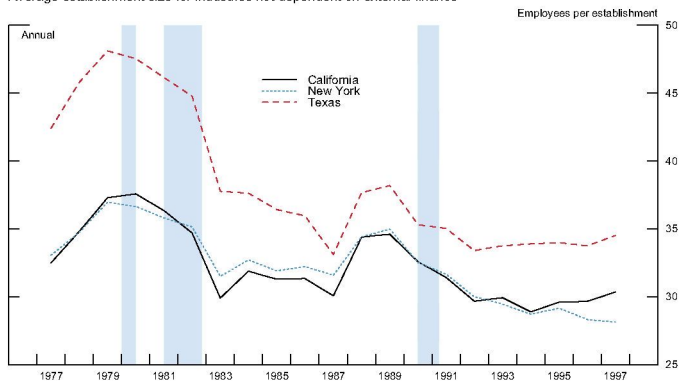
Manufacturing industries not dependent on external finance

- Instruments and related products, printing and publishing, miscellaneous manufacturing, stone, clay, glass, and concrete products, furniture and fixtures, fabricated metal products, food and kindred products, apparel and other textiles, tobacco manufactures, and leather and leather products

AVERAGE ESTABLISHMENT SIZE

(For industries not dependent on external finance)

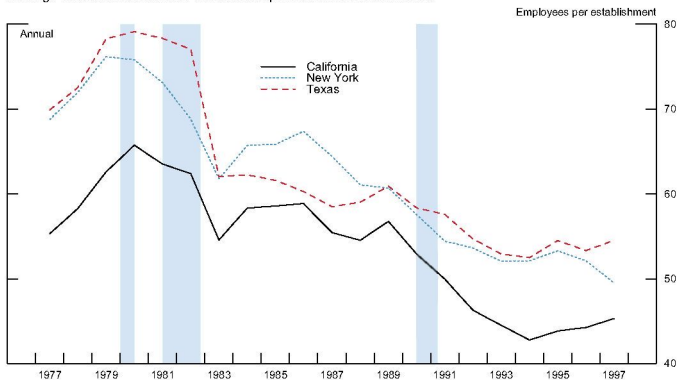
Average establishment size for industries not dependent on external finance



AVERAGE ESTABLISHMENT SIZE

(For industries dependent on external finance)

Average establishment size for industries dependent on external finance



EMPIRICAL SPECIFICATION

We specify that the number and size of establishments are explained by

- Credit supply factors: bank capital ratios, bank loan loss reserve ratios, bank competition and deregulation indicators, and aggregate credit conditions
- Credit demand factors: real gross state product and industry dynamics factors

ESTIMATION RESULTS

- Changes in capital ratios do not affect entry of firms
 - ▶ Incorporating is cheap and displaced employees might establish new firms
 - ▶ Real GSP appears to be more of a factor than capital ratios
- Increase in capital ratios leads to a decline in the average size
 - ▶ Expansions are costly, the financing constraint is binding
- One p.p. increase in capital ratios \Rightarrow p.p. decline in the average size

	Panel	Arellano-Bond
First year	$[-0.7; -1.2]$	$[-1.2; -1.4]$
Long run	$[-3.5; -5.5]$	$[-3.6; -5.9]$

LONG-RUN MACRO EFFECT

The long-run effect of a change in capital ratios on employment in bank-dependent industries?

$$\frac{\Delta Employment}{\Delta Cap.ratio} \times \Delta Cap.ratio =$$

$$Aver.size \times \underbrace{\frac{\Delta Number\ of\ establ.}{\Delta Cap.ratio}}_{=0} \times \Delta Cap.ratio$$

$$+ Number\ of\ establ. \times \frac{\Delta Aver.size}{\Delta Cap.ratio} \times \Delta Cap.ratio$$

BACK-OF-THE-ENVELOPE MACRO EFFECTS

- Employment in bank-dependent manufacturing industries in 1997 = 9.5 million
- An increase in capital ratios of one p.p. \Rightarrow job losses in thousands

	Panel	Dynamic panel
First year	$[-70; -115]$	$[-115; -135]$
Long run	$[-330; -525]$	$[-340; -560]$

CONCLUSION

- For manufacturing industries dependent on external finance one p.p. increase in capital ratios
 - ▶ Has no effect on firm creation
 - ▶ Leads to a decline in average firm size of up to 1.4 percent in the short run and up to 6 percent in the long run
- Firm creation might not decline in response to more limited access to finance
 - ▶ Setting up a business is not costly
 - ▶ Displaced employees may establish new firms
- Results highlight the effects that tighter capital adequacy standards (Basel III) may have on bank-dependent firm dynamics



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The Importance of Access to Capital for Business Innovation

Moderator: Traci Mach, Board of Governors of the Federal Reserve System

**Who Seeks and Who Receives? Implications of Demand for and Access to
Financial Capital by Young Firms**

Sheryl Winston-Smith, Temple University, Fox School of Business

Bank Capital Ratios and the Structure of Nonfinancial Industries

Seung Jung Lee, Board of Governors of the Federal Reserve System

Discussant: Clinton B. Gwin, President, Pathway Lending